

CLAIMS:

1. Brake application system for vehicles, particularly rail vehicles, having a device for the emergency release and a device for the auxiliary release of the brake, characterized in that the latter devices are combined in a combined device (1, 2) for the emergency release and auxiliary release of the brake, which device is electrically actuated by a common drive unit (112).

2. Brake application system according to Claim 1, characterized in that the device (1, 2) for the emergency release and auxiliary release of the brake is integrated in a wear adjuster having a helical gear (2), which is constructed as a pull or plunger rod adjuster (1) and which, as the screw connection parts, has a threaded spindle (4) and a nut (8) which can be screwed on this threaded spindle (4), at least one of the screw connection parts (8) being electrically actuated for the emergency and auxiliary release of the brake.

3. Brake application system according to Claim 2, characterized in that the one screw connection part (8) of the helical gear (2) for the emergency and auxiliary release is rotationally actuated by the common electric drive unit (112).

4. Brake application system according to Claim 3, characterized in that the other screw connection part (4) of the helical gear (2) for the wear adjustment is rotationally actuated by another electric drive unit (10).

5. Brake application system according to Claim 4, characterized in that, at least during the actuating of the other screw connection part (4) in one rotating direction for the wear adjustment, the one screw connection part (8) is held in a non-rotatable manner.

6. Brake application system according to Claim 5, characterized in that the one screw connection part (8) is coupled with the electric drive unit (112) by means of an unlockable free wheel (74) which, on the one hand, permits a rotation of the one screw connection part (8) by means of the electric drive unit (112) in one direction for the wear adjustment and, on the other hand, is constructed for blocking this rotation if it not caused by the electric drive unit (112).

7. Brake application system according to Claim 6, characterized in that the electric drive unit (10) of the other screw connection part (4) is actuated independently of the electric drive unit (112) of the one screw connection part (8).

8. Brake application system according to Claim 7, characterized in that the electric drive unit (112) of the one screw connection part (8) contains an electric motor (114) with a gearing (116, 118) on the output side, whose gearing output is rotationally coupled with the one screw connection part (8).

9. Brake application system according to Claim 8, characterized in that the one screw connection part (8) is coupled by way of a sliding clutch (70) with the electric drive unit (112) and has an application surface (68) for the application of a rotating tool.

10. Brake application system according to Claim 9, characterized in that the one screw connection part is formed by the nut (8) and the other screw connection part is formed by the threaded spindle (4).

11. Brake application system according to Claim 10, characterized in that the unlockable free wheel is formed as a wrap spring free wheel (74) between a cylindrical wall (100) of a non-rotatable part (26) and a sleeve (72) rotating along with the nut (8).

12. Brake application system according to Claim 11, characterized in that the electric drive unit (10) of the other screw connection part (4) contains an electric motor (12) with a gearing (14) on the output side, whose gearing output is rotationally coupled with the other screw connection part (4).

13. Brake application system according to Claim 8 and 12, characterized in that the electric motor comprises a d.c. motor (12, 114), and the gearing comprises a planetary gearing (16, 116) axially adjoining the d.c. motor (12, 114) as well as one or more gearwheel stages (18, 118) arranged behind the planetary gearing (16, 116).

14. Brake application system according to Claim 13, characterized in that a clutch (52) is provided which is arranged in front of the electric drive unit (10) of the other screw connection part (4), by means of which clutch (52), in the event of the presence of an axial

force originating from a braking, the screw connection part (4) is non-rotatably coupled with the non-rotatable part (24) and is otherwise uncoupled therefrom.

15. Brake application system according to Claim 14, characterized in that the clutch is formed by a cone clutch (52) having at least two conical surfaces (56, 58) which can be stopped as a result of friction against one another.

16. Brake application system according to Claim 15, characterized in that one of the conical surfaces (56) is constructed on a housing (24) and the other conical surface (58) is constructed on a conical sleeve (36) non-rotatably connected with the other screw connection part (4).

17. Brake application system according to Claim 16, characterized in that a threaded pin (50) of the other screw connection part (4) is screwed into an internal thread constructed in a bottom of the conical sleeve (36).

18. Brake application system according to Claim 17, characterized in that a gearwheel (30) meshing with a gearing-output-side gearwheel (28) of the gearing (14) is coaxially rotatably disposed on a cylindrical projection (34) of the conical sleeve (36).

19. Brake application system according to Claim 18, characterized in that a sliding clutch (38) is arranged between the electric drive unit (10) and the other screw connection part (4), which sliding clutch (38) is constructed to be slipping when stop positions have been reached and is otherwise coupling.

20. Brake application system according to Claim 19, characterized in that one stop position is formed by the application of the brake pads on the brake disc and the other stop position is formed by a screwing end position, in which the other screw connection part (4) is screwed into the one screw connection part (8) to the stop, or vice-versa.

21. Brake application system according to Claim 20, characterized in that the sliding clutch (38) is arranged between the cone clutch (52) and the electric drive unit (10) of the other screw connection part (4).

22. Brake application system according to Claim 21, characterized in that the sliding clutch (38) contains balls (40) pretensioned by defined spring pressure in grooves, the grooves being constructed on a face of the gearing-output-side gearwheel (28), and the balls (40) being held in bores (42) of a ring (44) non-rotatably held on the cylindrical projection (46) of the conical sleeve (36).